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IN TWO SECTIONS

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EDITORIAL DEPARTMENT NOTE

There is one type of mind which constantly strives for regularity, uniformity and standardization, and which is unnecessarily jarred by variations, irregularities and lack of conformity to what this type of person considers standard or accepted. Such a person deplores the great lack of uniformity in cost accounting methods and procedures without fully appreciating that after all cost accounting is a service function and most of these variations have arisen because they serve a useful purpose. A striving for uniformity is undoubtedly desirable, especially in fundamental principles, concepts and objectives, but methods of applying principles, interpreting concepts and reaching objectives will continue to vary as long as there are differences in individuals. Sometimes it is well to take time to consider which of the variations in our cost accounting are due to variations in fundamental concepts and principles, and which are merely differences arising from the application of these principles and concepts to different situations. Mr. McEachren has applied this type of analysis to the field of standard costs in the first article in this issue with very interesting results.

John W. McEachren, the author of this article, is Resident Partner of Ernst & Ernst in Detroit. After a varied experience in cost and general accounting with several manufacturing companies, he joined with the staff of Ernst & Ernst in 1922. Since then he has been devoting practically his entire time to special services such as cost and budget installations and management counsel. In addition to being a member of N.A.C.A., he is a member of the Michigan Society of C.P.A.'s and the American Institute of Accountants.

While many of our members are operating cost systems using basic standard costs and are thoroughly familiar with this method of costing, many other members undoubtedly have only a hazy idea of how basic standards are carried through the books. The second article is intended for this latter group, whose understanding of basic standards should be greatly increased by Mr. Hill's illustration of their application to a specific case.

Joseph A. Hill, the author of this second article, joined the Thorne Motor Corp. at Clearing, Ill., as Mechanical Engineer following the completion of courses in mechanical engineering and accounting at the Y. M. C. A. College in Chicago. He later assumed charge of production control and cost accounting for this company, subsequently taking over the same duties for the Amico Co., manufacturers of laundry and dry cleaning equipment. In 1934 Mr. Hill entered the employ of the Scholl Manufacturing Co., manufacturers of foot remedies and appliances, where he is now employed as Cost Accountant. He is a member of our Chicago Chapter.

Articles published in the ***Bulletin*** present many different viewpoints. In publishing them the Association is not sponsoring the views expressed, but is endeavoring to provide for its members material which will be helpful and stimulating. Constructive comments are welcomed and will be published in the Forum Section of the *Bulletin*

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NATIONAL ASSOCIATION OF
COST ACCOUNTANTS

FEBRUARY 1, 1940

CAN STANDARD COSTS BE STANDARDIZED?

By John W. McEachren, Resident Partner,
Ernst & Ernst, Detroit, Mich.

DESPITE the continuing progress in the adoption of standard costs, a great many companies still are using historical costs only. A report by the National Industrial Conference Board dated February, 1938, based on replies from 818 companies showed that 152, or less than 20 per cent, carried their in-process inventories on the balance sheet at standard cost. While such information cannot be conclusive as an indication of the percentage of companies using cost standards, it does indicate that a large proportion of manufacturing companies probably do not have a standard cost system.

Some Misconceptions

This situation is undoubtedly due in some cases to a misconception on the part of management of just what a standard cost system is and how it functions.

Costs in one sense are either product costs or process costs. Product costs may be computed either by product (part or assembly) numbers which are continued as long as the product is made or by job order numbers representing specific lots of each product. Process costs, on the other hand, disregard the individual product both in specific lots or in total and instead show the cost of the process regardless of the products produced. In speaking of "actual" or historical costs, product costs (either job order or part number) are the type usually referred to.

Standard cost systems provide for the computation of historical process costs to some extent. For example, the total "actual" direct labor expenditure in a production department involving one or a group of processes is an historical process cost and is compiled in order to determine the total direct labor variance in the department.

It has been erroneously inferred in many instances that under a standard cost system, so-called "actual" or historical product costs can not be compiled and that in any event they are useless.

It is true that historical product costs are of negligible value for day-to-day cost control purposes. But in cases where variances are of sizable amounts, the desirability of allocating such variances to products or product classes, resulting in substance in the compilation of historical product costs, should be considered. Relatively large material or labor variances may have some peculiar significance in relation to the cost of the individual product or classes of product. Perhaps the product cannot be made as cheaply as originally planned and the desirability of a higher selling price is indicated. If variances are not allocated to products such situations may be overlooked.

It is also true that historical product costs may not represent at all accurately the current or replacement cost and therefore may be entirely unsuitable in determining future policies. A product cost standard properly reflecting current conditions obviously is much more reliable.

A rather widespread impression exists on the part of management that a wide variety of products and numerous "special orders" preclude the use of cost standards. While it is obvious that simplicity in products manufactured or in processes permits corresponding simplicity in cost accounting, a standard cost system's value increases with the complexity of the manufacturing operations. For example, if only one product is manufactured, costs can easily be expressed as so much per unit and some perspective of the trend obtained even by comparison of historical costs only from period to period without the use of standards. As the number of products increases such comparisons become more impracticable.

Another frequent misconception is that cost standards represent averages based on records of past experience, are essentially an attempt to guess at future costs, and that a standard cost system is successful only if such averages develop few variances. Cost standards are set as a result of a thorough and objective study of current prices, product specifications, manufacturing equipment and methods, and attainable volume of production. Records of past experience are used only as background. If the standards are properly set, the development of variances is not a weakness of the system but probably an indication of ineffective control.

Historical Costs Not Really "Actual"

The use of the term "actual" has created a halo of absolute accuracy about historical costs as compared with standards, but it is quite obvious that historical costs are based on many arbitrary assumptions. For example, material is priced on a first-in, first-out basis, at an average cost, or on some similar assumption. Adjustment of inventories to the lower of cost or market prices at the beginning of the year may result in subsequently charging into costs material prices which do not represent the true historical cost. If the product requires a comparatively long time in its manufacture, the material prices by which the cost is computed probably will be based on purchases made at such widely varying times and under such varying conditions that the resultant cost is meaningless in practical use. Allowances to direct labor on piece work or some other form of incentive wage plan may be charged to burden. Certainly the application of burden to product costs involves a great many matters of judgment and arbitrary decisions, and burden is usually a very substantial element of total cost.

"Ideal" Is Unfortunate Term

The use of the term "ideal" in relation to standard costs has not helped progress in cost accounting. It implies that such cost standards are standards of perfection which in itself is amply sufficient to arouse the antagonism of any manufacturing executive. In actual practice the use of "ideal" standards is probably almost non-existent. They would be of little or no value for internal cost control and would not be suitable for pricing the inventory for balance sheet purposes. For control purposes, a cost standard must represent a reasonable attainment, and the same principle applies in the use of standards in pricing the inventories. While not entirely satisfactory, the use of the term "current standard cost system" is to be preferred as a substitute for "ideal," if it is really necessary to recognize two differing systems.

Any Major Difference Between Basic and Current Standard Plans?

There has apparently been some acceptance of the idea that there are two distinct types of standard cost systems: the current, or mislabeled "ideal," and the "basic." While there is supposedly

a fundamental difference in the two plans as to whether inventories in the balance sheet can ever be priced at standard, this difference is not so real when it is challenged. There appears to be no difference of opinion in respect to the burden content of the inventories; under both plans it is carried at a normal rate, but not in excess of the historical rate. In many current standard cost systems, raw materials are carried in the balance sheet on an historical cost basis, being priced in the usual way at the lower of cost or market without the use of ratios. In addition, a very large proportion of current standard cost systems provides for an annual or more frequent revision of the standards so that they are in effect (at least insofar as raw material prices and labor rates are concerned) representative of the lower of cost or market basis of inventory pricing, which presumably is the identical objective in the use of ratios for inventory pricing under the so-called "basic" plan.

It appears, therefore, that in actual practice the only substantial difference between the two plans in respect to the pricing of inventories is in the treatment of direct labor variances which actually may not be of major importance. With a current standard cost plan, these variances would be charged or credited to profit and loss; presumably under the basic plan they would be reflected in inventory values. It does not seem likely that this difference can be of major importance except in unusual cases.

The only real major difference between the two plans is a matter of mechanics. The basic plan appears to carry along a permanent set of standards which it attempts to adjust through the use of ratios to an historical cost basis for balance sheet purposes and to up-to-date standards for control purposes.

There are probably some companies manufacturing such an extensive variety of products that the complete revision of the cost standards is a rather gigantic task. In such cases, the use of ratios is probably the most practical method of effecting the necessary adjustments for balance sheet valuation purposes. But such cases appear to be the exception rather than the rule and it is obviously a simpler method and productive of more accurate results to revise the standards by the more direct procedure of making the necessary changes in the standards themselves rather than by the use of ratios.

The comparison of individual product costs over a period of years which is given so much emphasis in the "basic" plan, appears to be a matter of statistics rather than one of essential accounting information to be carried on the books. In most companies the almost continuous change in the design of the product makes it impossible to obtain any appreciable benefit from such comparisons over a long period of time.

Why Not Standards?

The idea of establishing a measure or standard of performance on all phases of the operations of a business enterprise is a generally accepted principle of management. The setting of cost standards is so evidently a part of this principle that the absence of such standards in any manufacturing enterprise definitely raises a question as to the adequacy of the accounting control.

A standard cost system is primarily and fundamentally a means of establishing a measure of performance in controlling all costs of operation. It does not mean that historical costs should never be compiled, but it does mean that such costs are not compiled without a means of comparison against predetermined standards or measures. A standard cost system does not predetermine costs but it does set up predetermined standards which, if the variances are quite small, may closely coincide with the corresponding historical costs.

Allocation of Variances

In many cases the standard cost system should provide for the allocation of variances according to individual products or classes of products, or by individual orders or classes of orders. It is true that numerous variations in costs occur which have no direct significance in respect to the cost of an individual product. On the other hand, the use of cost standards only without any allocation of variances to product costs may be dangerous. If any particular class of variances are of a minor amount, or if all variances for a period of time are a negligible total, such allocation can be dispensed with temporarily.

Presumably, a great many manufacturing concerns may, in the near future, be supplying products to the Army and Navy under contracts which are subject to the Vinson Act. Since this Act es-

tablishes a maximum profit based on the historical cost, such information must be obtained and the allocation of variances and computation of historical costs become essential.

Up to this point, the allocation of variances to product costs has been discussed from the standpoint of the information which the general management should have in connection with the broad problem of maintaining profit margins on the various products manufactured and sold. From the standpoint of the control of manufacturing costs only, it is unnecessary to allocate variances to product costs. An analysis for control purposes by causes and department of origin is essential, but the analysis by products may usually be dispensed with for this purpose.

It should again be emphasized, however, that a soundly established current cost standard is the most desirable cost to be used in determining future policies.

Inventories at Standard

A standard cost system is maintained primarily for internal control purposes, but many manufacturing concerns using standard costs have found it practicable to use the standards for the balance sheet valuation of inventories. Wherever possible, it seems highly desirable to follow this procedure since it simplifies the accounting work and tends to result in a sound pricing of inventory. It also has the further advantage of stating the inventory on the same basis for external reporting purposes and internal control purposes.

One of the major advantages of a current standard cost system is that cost variances are reflected in the profit and loss statement in the month in which they occur. Cost variances must be expressed in money and must affect the profit in the current accounting period if they are to carry a "punch." The expression of variances in dollars and cents is a more easily understood and a much more forceful method than their expression in ratios. If variances are included in the inventory as they arise, the profit and loss is not immediately affected and a great deal of the dynamic effect is lost. Any attempt to include variances in the profit and loss statement currently for internal purposes and to adjust the accounts to include them in the inventory valuation for external reporting purposes, as a regular procedure, is obviously a somewhat

awkward arrangement. It may require a substantial adjustment in the profit shown by the monthly financial statements, which would be difficult to explain and more difficult to justify. This procedure has, however, apparently been recommended by an accounting committee of an important industry.

In most cases the cost standards can be revised at the end of the accounting year to conform to the basis of the lower of cost or market pricing if this basis is followed. If the standards are not completely revised and are in excess of the lower of cost or market, suitable valuation reserves can be provided.

The inclusion of debit variances in the balance sheet inventory valuation cannot be banned from a financial accounting standpoint as long as the values are not in excess of the ultimate selling prices less a reasonable allowance for disposal costs. On the other hand, the pricing of the inventory for balance sheet purposes at reasonable standards which are not in excess of historical costs (or selling prices less cost of disposition) seems equally free from critimism, if consistently followed.

On the whole, therefore, it seems the preferable procedure and one to be followed wherever possible, to carry the cost standards into the balance sheet inventory valuation so that the same accounting policy is followed for external and internal purposes. Under this procedure the maximum dynamic effect of a standard cost system is available.

Standards for Control

For internal control purposes, cost standards should be considered from two standpoints which are supplementary and yet distinct:

1. Standards to be used as a check on the overall performance of the manufacturing function.
2. Standards to be used as a check on the performance of the various individual factory departments.

Differing standards applicable to the same labor operation, for example, may be used in the first instance as compared with the second.

At the beginning of the accounting year, presumably the cost standards have been revised to reflect current methods of manufac-

ture and the relative production standards. Upon approval of these standards by the factory management, they become, in effect, a commitment on their part that it is reasonable to expect that such standards can at least be met insofar as conditions under their control are concerned. Selling prices have presumably been established and marketing policies determined, more or less directly predicated on these cost standards. In practically all cases, an adverse variance will result in less than the anticipated profit since selling prices cannot be increased at will.

Under these circumstances it does not appear desirable to change frequently the cost standards being used as a check on the manufacturing function as a whole. If the standards set at the beginning of the year are retained unchanged, the variances accounts will show to what extent the factory management have been unable to hold the actual costs within the standards, or to what extent they have been able to cut costs under the standards.

Standards as an Over-all Check on the Manufacturing Function—How Often Should They Be Changed?

The subject of changing standards in this respect is very important, as it directly controls the amount of variances which will be shown. If the cost standards are changed too frequently, the perspective of the trend may be lost. If they are not changed often enough, they may become useless for such control purposes. Generally speaking, it would appear desirable to minimize the changes in standards for this purpose since this will result in less clerical work.

It does not appear possible to lay down a definite rule for the frequency of changes in standards (for use as a check on the manufacturing function) which can be applied to all types of manufacturing. An attempt will be made, however, to suggest a policy for different types of business.

Companies with Annual Models

We will first consider companies selling standard products consisting primarily of consumers goods such as automobiles, radios, refrigerators and vacuum cleaners. Annual models are produced and selling prices are established at the beginning of the model year which usually are unchanged throughout the year. There may

be special sales at reduced prices on excess stock toward the end of the model year. During the model year some changes may be made in the design of the product resulting from recommendations of the engineering department, but such changes probably will not modify the selling prices. During the year there will also be changes in prices of materials, possibly in labor rates and standard rates of production per hour for the various operations.

In a situation of this type, the desirable policy in the absence of major changes in conditions seems to be not to change the standards more than once a year insofar as general accounting purposes are concerned, and for checking the performance of the factory. On the other hand, to carry the standards unchanged into the next model year does not appear to serve any useful purpose. New models are being made and new standards should be set reflecting current design, method and price levels.

This policy will permit showing the effect in the variance accounts of changes in costs resulting from changes in design or methods during the model year. It sets up a guide post at the beginning of the model year based on production plans at that time and discloses the direction of the trend in costs either favorably or unfavorably from this starting point. The disclosure of the trend in costs for the model year through adequately classified variance accounts is information of practical utility. On the contrary, it seems obvious that such information is of maximum value only when based on standards which have some relation to the current year's products.

Since, ordinarily, selling prices cannot be revised during the model year to offset an adverse cost trend, it follows that the minimizing of such a trend is essential to attaining the profit goal.

Companies Manufacturing to Order

Another class of companies which may be considered includes manufacturing enterprises selling products largely on specific orders, the selling price being established rather directly on the manufacturer's estimate of cost, although influenced by competitive conditions. The selling price applies to a specific contract and will not be changed except for changes in specifications originated by the purchaser subsequent to the signing of the contract.

In actual practice, a product cost standard in respect to material and labor is established at any given date on the then current methods of manufacture and rates of production, current prices for material and current wage rates. The standard should be approved by the factory management as being in accordance with their plans for producing the product. They will be responsible for any variances from these standards arising from internal causes.

As time goes on, changes will be made in the methods of manufacture, resulting in either lower or higher costs. It seems important not to change the standards too frequently if the trend of the variances is to be observed. If it is discovered that the product cannot be made as originally planned and a more costly method must be substituted, the variance accounts should show the additional cost incurred. On the contrary, if lower cost production methods are worked out, the resulting savings should be shown.

If standards are changed very frequently, their value as a check on the performance of the factory management will be largely lost. If a new standard is set up each time a production method is changed, it will enable the factory management to avoid showing debit variances resulting from an unfavorable trend in manufacturing methods.

It seems desirable, therefore, to carry the original standard throughout the life of the contract until a new selling price is established based on a new standard reflecting current conditions.

Apparently there are standard cost systems in operation which permit the frequent and almost constant changing of standards used to check the performance of the manufacturing management. As a result, an operation may be classed as a variance today but tomorrow it is incorporated in the revised standard and the variance is thereby eliminated. This procedure seems to open up a rather wide loophole for the elimination of variances by changing the standards.

Another disadvantage in the frequent changing of standards is the necessity of adjusting the inventory values which obviously requires additional clerical work. If the standards are changed at interim dates and adequate book records are not available on the quantities of the product on hand at the various stages of pro-

duction, it becomes necessary to take special physical inventories of the product affected.

Companies Manufacturing Standard Products

Let us consider companies manufacturing standard products such as cement, chemicals, certain textile products and cereals. There are infrequent changes in formula, design or methods of manufacture. Selling prices may fluctuate frequently and widely, but due almost entirely to external conditions. Under such circumstances, it may be possible to carry the standards along unchanged for more than a year, but they should be challenged annually. As progressive manufacturing management develops lower cost methods, the standards should reflect these reductions at least once a year.

Standards are in a sense a contract by the factory management that the product can be manufactured at a cost not in excess of the standard. Such a contract conceivably might be held against the factory management during the life of the product. However, if the product is a very stable one and is made from year to year with no changes or only minor changes in design, it does not appear reasonable to hold the factory management to this contract indefinitely. If current costs are lower, a new standard will tend to encourage further reductions more than an old standard which can easily be bested. If current costs are higher, the old standard may not be attainable, with the result that the factory management is discouraged through accumulating the adverse trend over a period of years.

Standards as a Check on the Performance of the Individual Departments—How Often Should They Be Changed?

Standards to be used by the factory management as a check on the individual departments must obviously be based on current conditions and represent a reasonable attainment. For example, the standard production per hour as established in the original standard for a certain operation may have been 400 per hour on a specified piece of equipment. It now appears that a satisfactory product cannot be made on this equipment and another machine must be used permanently which will produce only 300 per hour. This increased cost is the responsibility of the factory management but not of the departmental foreman. If the production

per hour runs below 300, it is the foreman's responsibility, however, and the standard used as a check on the direct labor cost in his department is, therefore, based on this figure.

On the other hand, the factory management originally planned on a production of 400 per hour and the decision to take the order was predicated on this representation. They are, therefore, responsible for the excess cost arising from this difference and the standard used to check their performance remains at 400 per hour.

Standards for scrap losses and controllable burden expressed in terms of ratios to standard hours, dollars or production quantities need not be changed so frequently since such ratios are affected only by rather major changes in conditions.

Summary

A cost system which provides only for historical costs without the use of cost standards is definitely subject to challenge. Cost standards express in money the planned product specifications, manufacturing methods and production volume which are "prerecorded" in formal records in any properly organized manufacturing organization. They are an essential part of adequate accounting control.

Progress in the wider adoption of formal cost standards has been delayed by some misconception on the part of management, engendered to a considerable extent by the use of accountants of terms such as "ideal," "basic" and "actual," and the feeling that standard cost systems entirely preclude the compilation of historical product costs.

The apparent differences between the so-called "basic" and "current" plans are not insurmountable. They are primarily a matter of mechanics and should not be regarded as creating two entirely distinct systems.

Cost standards to be used to express the effectiveness of the control exercised by departmental foremen over direct labor, for example, may be different standards than those used as a check on the overall manufacturing function.

Progress in the standardization of terminology and fundamental policies in respect to the use of cost standards will further their adoption by the large number of manufacturing concerns now using only historical costs.

BASIC STANDARD COST ACCOUNTING EMPLOYING THE USE OF COST RATIOS

By Joseph A. Hill, Cost Accountant,
Scholl Manufacturing Co., Chicago, Ill.

THE evolution of cost accounting has been so rapid in the last few years that there is now a growing tendency on the part of the management to not only acknowledge its value and importance, but also assist in its further development. We should express our thanks to the so-called "depression years" whose many problems compelled a much closer association of ideas that heretofore were considered too scholastic.

How to continue the operation of a manufacturing plant at a profit, however small, with a greatly reduced personnel and machine capacity curtailed, required that cost control methods be still further refined. Many manufacturers were forced to practically eliminate their cost departments because of the large expense of operating an elaborate system that gave them little assistance in controlling costs. The solution in many cases was basic standard cost accounting employing the use of cost ratios. This method of cost control is rapidly gaining favor because of the results obtainable at a much lower expense of cost department operation.

Setting Standards

The procedure presented herein will not apply to every particular need, but will form a basis for development suitable to the individual need. The space allotted for this article will not permit elaboration of all elements involved in a cost control system; therefore, the description of the fundamentals has been held to a minimum.

Most cost accountants are familiar with standard costs and the manner in which they are established. The importance of properly establishing standards must not be overlooked. In arriving at a standard cost it is important that the standard be the cost at which the item can and should be produced under expected conditions. It is essential that a normal operating capacity be determined before setting up detailed standards. This capacity should be determined by the operating personnel and approved by the management. It will be based on the past history of the business, with proper con-

sideration being given to the present and anticipated business conditions. With consideration given this operating capacity, true standards can be set for materials, labor and burden.

Use of Standards

In the use of standards it is natural that the results will vary from the original assumptions, but inasmuch as the latter are based on manufacturing specifications and the best judgment of the operating personnel, the variations become guides to the management.

Standards under the basic cost plan remain constant. The per cent of actual costs to standard costs create cost ratios which are used in determining—

a. Actual costs of materials, labor and burden going into work in process.
b. Actual cost of merchandise produced.
c. Actual costs of sales.
d. Actual values of inventories.

In the system outlined herein there are no variance accounts used except for burden variance due to capacity operated. However, current and cumulative figures are always available. Variations from standard are picked up by cost ratios. All raw material, work-in-process and finished goods accounts are debited and credited at both actual and standard amounts and are controlled by two accounts, namely, the standard and general ledger control accounts. The standard control account represents the total factory inventory at standard cost. The general ledger control account balance is the total of all factory inventories at actual cost and will always be in balance with the factory inventory account in the general ledger.

Establishment of Inventory Accounts

In many manufacturing plants because of features peculiar unto themselves, it is advisable to use a group rather than unit method of costing. Experience has found this method to be economical in operation and exceptionally satisfactory as to results. The group method is recommended for an industry where many various types of raw materials are used and manufacturing covers a great number of items.

When setting up raw material inventory accounts, it is important to group items of like kind subject to the same price trend. Materials of an individual nature should not be grouped. For example, in a plant using in its manufactured products such materials as iron castings, moulded rubber, paper cartons, paper boxes, metal tins and metal cans, it would be proper to group paper cartons and paper boxes in one account and metal tins and metal cans in another account. The other materials listed having no relationship one to the other should be set up as individual accounts.

Items in process are made up of several different raw materials and, therefore, it is important in grouping these items into work-in-process inventory accounts that only items using raw materials included in the same raw material accounts be grouped. For each work-in-process inventory account we have an identical finished goods inventory account to which transfer is made upon completion.

Accounting for Raw Material Purchases

A standard cost material record must be set up. This record will include the standard cost of all direct raw materials used in forming or producing a part or all of the finished product. In addition to name and description it will show the specifications, finished parts in which used, inventory account classification, and other information as desired.

All vendor invoices covering raw material purchases are classified, priced and extended at standard cost, and listed at standard and actual on a form known as "Summary of Raw Material Purchases." One of these forms is required for each raw material inventory account. It is sufficient to say that these sheets are tabulated and the total of each account debited by journal voucher to the proper raw material accounts at standard and actual amounts. The entry would be made as follows:

Debit		Description	Credit	
Actual	*Standard*		*Actual*	*Standard*
xxx.xx	xxx.xx	Acct. 50 Moulded rubber		
xxx.xx	xxx.xx	51 Iron Castings		
xx.xx	xx.xx	52 Cartons-Boxes		
		General Ledger Control Acct. 1	xxx.xx	
		Standard Control Acct. 2		xxxx.xx

FACTORY LEDGER
RAW MATERIAL ACCOUNTS

CARTONS - BOXES — RAW MATERIAL ACCOUNT NO. 52

IRON CASTINGS — RAW MATERIAL ACCOUNT NO. 51

RUBBER — RAW MATERIAL ACCOUNT NO. 50

DEBIT				CREDIT			
Ref.	Act.	Std.	Ratio	Ref.	Act.	Std.	Ratio
Balance	$1,000.	$1,000.	100				
Purchases	1,200.	1,000.	120				
Total Debits	2,200.	2,000.	110	Withdrawals	$1,485.	$1,350.	110
New Balance	$715.	$650.	110				

From Summary of Raw Material Purchases

Debit to Work in Process Accounts (See Forms "A" and "B")

FIGURE I

Accounting for Raw Material Usage

Figure 1, factory ledger raw material inventory accounts, illustrates how raw material cost ratios are created and used in transferring materials into work-in-process accounts at actual as well as standard values. It will be noted that the current month's debit to the account is added to the previous balance in the account and the total actual and standard create the cost ratio to be used in relieving the account.

With a setup of raw material accounts as illustrated in Figure 1, statements can be presented to the management that will reflect the price trend of actual material costs against standards. The effect of a rising market on profit can often be checked by specification changes, larger quantity purchases, or by a more concentrated effort to reduce waste and spoilage.

In most cases there is more than one raw material used in the manufacture of a certain product and there also is more than one product using some of the same raw material. It is, therefore, necessary to summarize raw materials used by raw material accounts as well as by product classes (work-in-process accounts).

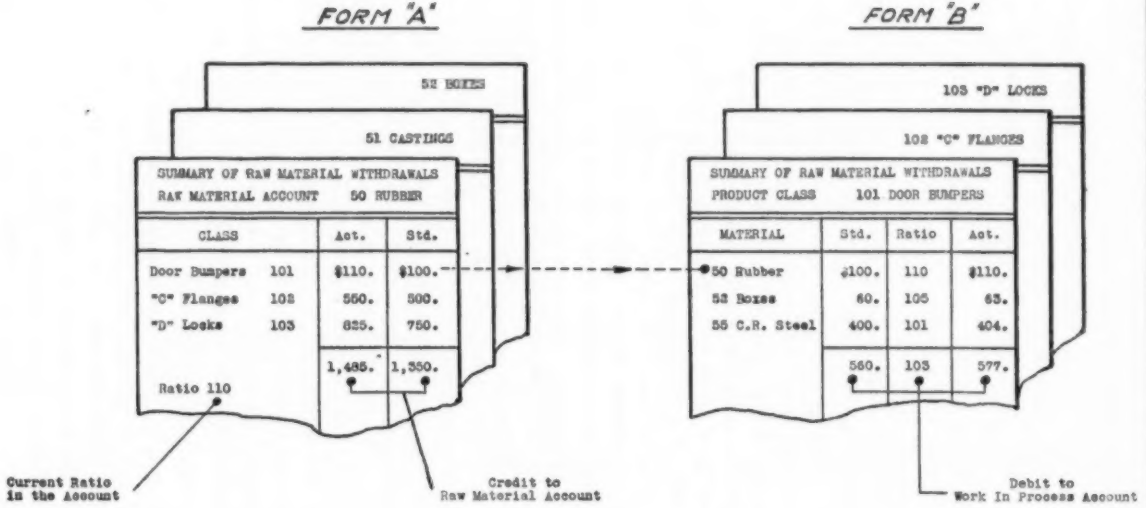
Form A, known as "Summary of Raw Material Withdrawals—by Raw Material Account," is used to summarize raw materials withdrawn during the month. One of these forms is used for each raw material account to show the actual and standard amounts of this raw material used to manufacture products included in the different work-in-process accounts. The total withdrawals listed for each account represent the total credit to the account.

On Form B, "Summary of Raw Material Withdrawals—by Product Class," is listed the total amounts of material withdrawals from the different raw material accounts used to produce items in each particular product class. One of these forms is used for each product class and the total thereon is the total material debit to the work-in-process account.

The Work-in-Process Account

Figure 2 is a typical arrangement showing total actual and standard cost of materials used, direct labor expended, and burden absorbed in each department for each class of product completed and in process of completion at the end of the month.

The illustration shows material charges to the account by Department A only. However, in many cases materials required to


FORM "A"
52 BOXES
51 CASTINGS
SUMMARY OF RAW MATERIAL WITHDRAWALS
RAW MATERIAL ACCOUNT 50 RUBBER
CLASS
Act.
Std.
Door Bumpers 101
$110.
$100.
"C" Flanges 102
550.
500.
"D" Locks 103
825.
750.
1,485.
1,350.
Ratio 110
Current Ratio in the Account
Credit to Raw Material Account
FORM "B"
103 "D" LOCKS
102 "C" FLANGES
SUMMARY OF RAW MATERIAL WITHDRAWALS
PRODUCT CLASS 101 DOOR BUMPERS
MATERIAL
Std.
Ratio
Act.
50 Rubber
$100.
110
$110.
52 Boxes
60.
105
63.
55 C.R. Steel
400.
101
404.
560.
105
577.
Debit to Work In Process Account

complete an item are withdrawn by and used in more than one department. In such cases, if desired, Forms A and B can be arranged to summarize materials used by department as well as product class in which the material is used.

Direct labor and burden charges to the accounts are vouchered from Form C, "Summary of Direct Labor and Burden Absorbed." One of these forms is used for each department to list the total amount of that department's labor and burden to be charged to the various product classes.

To procure the total standard direct labor performed by each department on each product class, it is necessary to price and extend all items completed during the month and in process at the end of the month at standard labor cost.

The actual direct labor as shown against standard on Form C is reported for each product class only and not for individual items included in each product class. When labor variances from standard are excessive in any product class, it may be well to make periodic checks of actual unit labor costs.

Burden absorbed at standard is determined by applying the standard burden rate on the standard labor amount. This standard rate is the rate used in building up unit standard costs and should remain constant at all times. When actual expenses greatly exceed or are much less than budgeted, a new rate for absorbing expenses at actual should be established and used to prevent an excessive adjustment of over- or under-absorbed burden at the end of a period.

Finished Goods

This is illustrated on Form C where a burden rate of 120 per cent is used for the standard amount absorbed and a rate of 132 per cent is applied on standard labor in order to absorb more of the actual expenses. The difference between the actual factory expenses and the expenses actually absorbed is charged to an over- or under-absorbed burden account and cleared out as an additional cost of sales.

Illustrated in Figure 2, all charges to a work-in-process account are added to the previous balance in the account and a cost ratio for relieving the account is created by dividing the total actual by the total standard amount.

ILLUSTRATION OF A TYPICAL ARRANGEMENT OF WORK IN PROCESS ACCOUNTS IN THE FACTORY LEDGER

WORK IN PROCESS ACCOUNT — "D" LOCKS - PRODUCT CLASS NO. 103

WORK IN PROCESS ACCOUNT — "C" FLANGES - PRODUCT CLASS NO. 102

WORK IN PROCESS ACCOUNT — DOOR BUMPERS - PRODUCT CLASS NO. 101

DESCRIPTION	MATERIAL			LABOR			BURDEN			TOTAL DEBIT			CREDIT		
	Act.	Std.	Ratio	Act.	Std.	Ratio	Absorbed	Std.	Ratio	Act.	Std.	Ratio	Act.	Std.	Ratio
								Balance →		$1,500.	$1,500.	100			
Dept. A	$577.	$560.	103	$568.	$600.	111	$660.	$600.	110						
Dept. B	-	-	-	180.	200.	90	210.	200.	105						
Dept. C	-	-	-	275.	250.	110	228.	250.	91						
Dept. D	-	-	-	430.	400.	108	515.	460.	112						
Total Cost of Production	$577.	$560.	103	$1,430.	$1,350.	106	$1,613.	$1,510.	107	3,620.	3,420.	106			
								Total Debits →		$5,120.	$4,920.	104	$3,432.	$3,300.	104
								New Balance →		$1,688.	$1,620.	104			

Debit To Finished Stock Account

FIGURE 2

FORM "C"

DIRECT LABOR AND BURDEN SUMMARY
DEPARTMENT "C"

DIRECT LABOR AND BURDEN SUMMARY
DEPARTMENT "B"

DIRECT LABOR AND BURDEN SUMMARY
DEPARTMENT "A"

PRODUCT CLASS	LABOR			BURDEN		
	Std.	Act.	Ratio	Std. (Rate 120%)	Actually Absorbed (Rate 132%)	Ratio
101	$500.	$555.	111	$600.	$660.	110
102	200.	210.	105	240.	264.	110
103	400.	460.	115	480.	528.	110
Totals	$1,100.	$1,230.	112	$1,320.	$1,452.	110

Labor And Burden Debits To Work In Process Accounts (See Figure 2)

All merchandise completed and transferred to finished stores during the month is priced and extended at total standard cost. It is then grouped and totaled by product class. The appropriate current cost ratios developed in the various work-in-process accounts are applied to the total standard cost amounts of the products completed (by product class) to arrive at an actual total cost of merchandise completed in each class.

Inter-cost ledger transfer is made charging finished stock inventory accounts (see Figure 3) at actual and standard and crediting work-in-process accounts. The current month's debit to the account is added to the previous balance in the account and these actual and standard amounts are used to create a current cost ratio to be applied on the standard cost of goods sold (by product class) thus determining an actual cost of sales for the product class.

Revision of Standards

As mentioned in the first part of this article, standards properly established are a true goal of accomplishment. In the writer's mind true standards are the backbone of a standard cost "control" system. Many executives and cost accountants are of the opinion that standards must be revised when variations from standards continue for some time. When variations from standards of material, labor, burden, or all three elements of cost appear and are not caused by non-controllable causes such as rising market prices, increased wage rates, poor business conditions, etc., the original standards are still true measures of performance. Should actual costs continue to vary from standards in the same direction, year after year, as for example:

Year	*Ratio*
1931	100
1932	110
1933	112
1934	112

and the management is convinced that the original standards are no longer true measures of performance but feel that the 1932 costs (standard plus 10 per cent) are the ideal costs for comparative purposes, these may be used without changing standards.

There is nothing complex or mysterious about this type of cost system. It is an economical and accurate means of cost accounting and is invaluable for cost control.

FINISHED STOCK ACCOUNTS IN THE FACTORY LEDGER

FINISHED STOCK ACCOUNT "D" LOCKS - PRODUCT CLASS 203

FINISHED STOCK ACCOUNT "C" FLANGES - PRODUCT CLASS 202

FINISHED STOCK ACCOUNT DOOR BUMPERS - PRODUCT CLASS 201

Description	DEBIT			CREDIT		
	Act.	Std.	Ratio	Act.	Std.	Ratio
Balance	$1,100.	$1,100.	100			
From Process Acct.	3,432.	3,300.	104			
Total Debits	4,532.	4,400.	103	$3,605.	$3,500.	103
New Balance	$927.	$900.	103			

TO STANDARD CONTROL ACCOUNT (FACTORY LEDGER)

ANALYSIS - COST OF GOODS SOLD BY PRODUCT CLASS

Description	Quantity	Unit Std. Cost	Std. Cost Extention
Product Class 201	Units		
No. DB 1	5,000	$ .10	$500.
" DB 2	10,000	.14	1,400.
" DB 4	11,000	.08	880.
" DB 9	6,000	.12	720.
		Total Std. Cost	$3,500.
		Current Cost Ratio	103
		Total Actual Cost	$3,605.
Product Class 202			
No. C 6 Etc.			

COST OF SALES ACCT.

DEBIT	CREDIT
Cost Of Door Bumpers Sold	

FIGURE 3

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